

# Sr. Outdoor Play

- 0 Rainy Yes
- 1 Sunny Yes
- 2 Overcast Yes
- 3 Overcast Yes
- 4 Sunny No
- 5 Rainy Yes
- 6 Sunny Yes
- 7 Overcast Yes
- 8 Rainy No
- 9 Sunny No
- 10 Sunny Yes
- 11 Rainy No
- 12 Overcast Yes
- 13 Overcast Yes

→ Frequency table for  
Rainy weather condition

weather	Yes	No
Rainy	5	0
Overcast	2	2
Sunny	3	2
	10	4

→ Likelihood table for  
weather condition

w.	Yes	No	Total
Overcast	5	0	5/14 = 0.357
Rainy	2	2	4/14 = 0.286
Sunny	3	2	5/14 = 0.357
Total	10/14	4/14	
	0.714	0.286	

→ For Yes.

$$P(\text{Yes}|\text{Sunny}) = \frac{P(\text{Sunny}|\text{Yes}) \cdot P(\text{Yes})}{P(\text{Sunny})}$$

$$\frac{0.357}{0.357} = \frac{0.357 \times 0.714}{0.357 \times 0.714} = 0.60$$

For No:

$$P(\text{No}|\text{Sunny}) = \frac{P(\text{Sunny}|\text{No}) \cdot P(\text{No})}{P(\text{Sunny})}$$

$$= \frac{0.5 \times 0.29}{0.357} = 0.41$$

original (0.61, 0.41)

$$= 0$$



→ Frequency table for temp!

temp	x	n <sub>0</sub>
(4) hot	2	2
(6) mild	4	2
(4) cool	3	1

→ Likelihood table for temp!

temp	Y	N	T
hot	2	2	4/14 = 0.29
mild	4	2	6/14 = 0.43
cool	3	1	4/14 = 0.29
T	9	5	
	9/14 = 0.64	5/14 = 0.36	

→ For Yes.

$$P(Y/\text{hot}) = \frac{P(\text{hot}/Y) \cdot P(Y)}{P(\text{hot})} = \frac{0.22 \times 0.64}{0.29} = 0.44$$

→ For No:

$$P(N/\text{hot}) =$$

→ freq table for humidity.

humidity	Y	N	T
(7) high	3	4	7/14 = 0.5
(7) normal	3	1	7/14 = 0.5
T	9/14 = 0.64	5/14 = 0.36	



→ Freq table for windy.

Windy	X	N	To
(a) True	3	3	6/14 = 0.43
(b) False	6	2	8/14 = 0.57
To	9/14 = 0.64	5/14 = 0.36	

~~Forest~~ { Raining, Hot, Humid, Time }

$$P(Y|Raining) = 0.49$$

$$P(N|Raining) = 0.5$$

$$P(N|Rain) = 0.5$$

$$P(Yes|Hot) = 0.49$$

$$P(No|Hot) = 0.5$$

$$P(N|no) = 0.5$$

$$P(Y/no) = 0.86$$

$$P(N/no) = 0.144$$

$$P(Y/no) = 0.86$$

$$P(Y/T) = 0.49$$

$$P(N/T) = 0.59$$

$$P(N/T) = 0.89$$

$$P(Y/no) =$$

→ Freq table for windy.

windy	X	N	To
(1) True	3	3	6/14 = 0.43
(2) False	6	2	8/14 = 0.57
To	9/14 = 0.64	5/14 = 0.36	

~~Rain~~ { Raining, Hot, Humid, True }

$$P(Y|Raining) = 0.49$$

$$P(N|Raining) = 0.5 \quad \rightarrow \quad r_{max} P(N|Rain) = 0.5$$

$$P(Y|Hot) = 0.49$$

$$P(N|Hot) = 0.5 \quad \rightarrow \quad r_{max} P(N|Hot) = 0.5$$

$$P(Y|No) = 0.86 \quad \rightarrow \quad r_{max} P(Y|No) = 0.86$$

$$P(N|No) = 0.144$$

$$P(Y|T) = 0.49 \quad \rightarrow \quad r_{max} P(N|T) = 0.51$$

$$P(N|T) = 0.51$$

$$r_{max} P(Y|No) = 0.86$$